

CLAIMS

What is claimed is:

1 1. A multimedia apparatus comprising:
2 a mass storage device to store uncompressed and compressed multimedia
3 content; and
4 compression logic executed by a processor, said compression logic
5 configured to
6 store uncompressed multimedia content in an interim multimedia buffer
7 on said mass storage device,
8 compress said uncompressed multimedia content as a background task to
9 generate compressed multimedia content responsive to a user request to record
10 said multimedia content, and
11 store said compressed multimedia content in long term multimedia buffer
12 on said mass storage device.

1 2. The multimedia apparatus as in claim 1 wherein said compression
2 logic is further configured to:
3 stream said compressed multimedia content from said long term
4 multimedia buffer to a decompression module and then to a multimedia
5 rendering device responsive to a user request to view said multimedia content.

1 3. The multimedia apparatus as in claim 2 wherein said compression
2 logic is further configured to:
3 automatically stream said uncompressed multimedia content remaining in
4 said interim multimedia buffer directly to said multimedia rendering device once
5 said compressed multimedia content stored in said long term multimedia buffer
6 has been streamed to said rendering device.

1 4. The multimedia apparatus as in claim 1 wherein said multimedia
2 content is broadcast video content.

1 5. The multimedia apparatus as in claim 4 wherein said broadcast video
2 content is transmitted from a cable television provider.

1 6. The multimedia apparatus as in claim 4 wherein said broadcast video
2 content is a Webcast transmitted over a data network.

1 7. The multimedia apparatus as in claim 1 further comprising:
2 light compression logic configured to compress said multimedia signal
3 before said multimedia signal is stored in said interim multimedia buffer.

1 8. The multimedia apparatus as in claim 7 wherein said light
2 compression logic is adaptive differential pulse code modulation ("ADPCM")
3 logic.

1 9. The multimedia apparatus as in claim 7 wherein said light
2 compression logic is digital video ("DV25") compression.

1 10. A computer-implemented method for decreasing the cost of a
2 multimedia storage device comprising:
3 storing multimedia content in an interim multimedia buffer on a mass
4 storage device before compressing said multimedia content;
5 compressing said multimedia content as a background task to generate
6 compressed multimedia content responsive to a user request to record said
7 multimedia content; and

8 storing said compressed multimedia content in long term multimedia
9 buffer on said mass storage device.

1 11. The method as in claim 10 further comprising streaming said
2 compressed multimedia content from said long term multimedia buffer to a
3 decompression module and then to a multimedia rendering device responsive to
4 a user request to view said multimedia content.

1 12. The method as in claim 11 further comprising automatically streaming
2 said uncompressed multimedia content remaining in said interim multimedia
3 buffer directly to said multimedia rendering device once said compressed
4 multimedia content stored in said long term multimedia buffer has been
5 streamed to said rendering device, if any uncompressed multimedia content
6 remains in said interim data buffer when said long term storage buffer is empty.

1 13. The method as in claim 10 wherein said multimedia content is
2 broadcast video content.

1 14. The method as in claim 13 wherein said broadcast video content is
2 transmitted from a cable television provider.

1 15. The method as in claim 13 wherein said broadcast video content is a
2 Webcast transmitted over a data network.

1 16. The method as in claim 10 further comprising compressing said
2 multimedia content in real-time using light compression logic before said
3 multimedia content is stored in said interim multimedia buffer.

1 17. The method as in claim 16 wherein said light compression logic is
2 adaptive differential pulse code modulation ("ADPCM") logic.

1 18. The method as in claim 16 wherein said light compression logic is
2 digital video ("DV25") compression.

1 19. A method implemented on a multimedia storage apparatus
2 comprising:

3 storing compressed multimedia content in an interim storage buffer at a
4 first compression ratio, said first compression ratio being that at which said
5 compressed multimedia content was transmitted by a multimedia content
6 broadcaster;

7 converting said compression ratio of said compressed multimedia content
8 from said first compression ratio to a second compression ratio; and

9 storing said multimedia content compressed at said second compression
10 ratio in a long term storage buffer.

1 20. The method as in claim 19 wherein converting comprises:

2 decompressing said multimedia content compressed at said first
3 compression ratio; and

4 recompressing said multimedia content at said second compression ratio,
5 said second compression ratio being higher than said first compression ratio.

1 21. The method as in claim 19 wherein converting said compressed
2 multimedia content to compressed multimedia content at said second
3 compression ratio is performed by a CPU as a background task.

1 22. The method as in claim 19 wherein said compressed multimedia
2 content at said first compression ratio is DV25-compressed and said compressed
3 multimedia content at said second compression ratio is MPEG1-, MPEG2- or
4 MPEG4-compressed.

1 23. The method as in claim 19 further comprising streaming said
2 multimedia content from said long term storage buffer to a decompression
3 module and then to a multimedia rendering device responsive to a user request
4 to view said multimedia content.

1 24. The method as in claim 19 further comprising automatically streaming
2 said multimedia content remaining in said interim storage buffer to a
3 decompression module once said compressed multimedia content stored in said
4 long term storage buffer has been streamed to said rendering device, if any
5 multimedia content remains in said interim storage buffer when said long term
6 storage buffer is empty.

1 25. The method as in claim 19 wherein said multimedia content is
2 broadcast video content.

1 26. The method as in claim 22 wherein said broadcast video content is
2 transmitted from a cable television provider.

1 27. The method as in claim 22 wherein said broadcast video content is a
2 Webcast transmitted over a data network.

1 28. A method implemented on a multimedia storage apparatus
2 comprising:

3 storing multimedia content compressed using a first compression type in
4 an interim storage buffer, said first compression type being that at which said
5 compressed multimedia content was transmitted by a multimedia content
6 broadcaster;
7 converting said compression type of said multimedia content from said
8 first compression type to a second compression type; and
9 storing said multimedia content compressed using said second
10 compression type in a long term storage buffer.

1 29. The method as in claim 28 wherein converting comprises:
2 decompressing said multimedia content compressed using said first
3 compression type; and
4 recompressing said multimedia content using said second compression
5 type, said second compression type providing relatively greater compression
6 than said first compression type.

1 30. The method as in claim 28 wherein converting is performed by a CPU
2 as a background task.

1 31. The method as in claim 28 wherein said first compression type is
2 DV25 compression and said second compression type is MPEG-1, MPEG-2 or
3 MPEG-4.

1 32. The method as in claim 28 further comprising streaming said
2 multimedia content from said long term storage buffer to a decompression
3 module and then to a multimedia rendering device responsive to a user request
4 to view said multimedia content.

1 33. The method as in claim 28 further comprising automatically streaming
2 said multimedia content remaining in said interim storage buffer to a
3 decompression module once said compressed multimedia content stored in said
4 long term storage buffer has been streamed to said rendering device, if any
5 multimedia content remains in said interim storage buffer when said long term
6 storage buffer is empty.

1 34. The method as in claim 28 wherein said multimedia content is
2 broadcast video content.

1 35. The method as in claim 34 wherein said broadcast video content is
2 transmitted from a cable television provider.

1 36. The method as in claim 34 wherein said broadcast video content is a
2 Webcast transmitted over a data network.

1 37. The method as in claim 34 wherein said broadcast video content is
2 transmitted from a satellite content provider.

1 38. The method as in claim 34 wherein decompression of said multimedia
2 content compressed at said second compression type is performed in real time by
3 a general purpose processor.

1 39. The method as in claim 28 wherein said first compression type is
2 MPEG-2 and said second compression type is Real Video 8.

1 40. A method for providing trick modes and long term storage on a
2 multimedia storage device comprising:

3 storing first multimedia content in an trick mode data buffer on a mass
4 storage device, said trick mode data buffer storing said first multimedia content
5 in a compression format and ratio at which said first multimedia content was
6 transmitted;

7 storing second multimedia content identified for long term storage in an
8 interim multimedia buffer on said mass storage device in a compression format
9 and ratio at which said second multimedia content was transmitted;

10 converting said second multimedia content as a background task to a
11 user-specified compression format and/or compression ratio to generate
12 compressed second multimedia content responsive to a user request to record
13 said multimedia content; and

14 storing said compressed multimedia content in long term multimedia
15 buffer on said mass storage device.

1 41. The method as in claim 40 further comprising streaming said first
2 multimedia content from said trick mode data buffer to a decompression module
3 and then to a multimedia rendering device responsive to a user request to view
4 said multimedia content.

1 42. The method as in claim 40 wherein said first multimedia content is a
2 live multimedia broadcast.

1 43. The method as in claim 40 further comprising stopping streaming said
2 first multimedia content responsive to a user command to stop said streaming
3 while at the same time continually storing additional live incoming multimedia
4 content in said trick mode data buffer.

1 44. The method as in claim 42 wherein said live multimedia broadcast is a
2 Webcast transmitted over a data network.

1 45. The method as in claim 40 further comprising compressing said
2 multimedia content in real-time using light compression logic before said
3 multimedia content is stored in said interim multimedia buffer.

1 46. A system for storing and playing back multimedia content
2 comprising:
3 first compression means for compressing an incoming multimedia signal
4 in real-time to produce first-compressed multimedia content;
5 first storage means for storing said first-compressed multimedia content;
6 conversion means for converting said first-compressed multimedia
7 content to second-compressed multimedia content having a different
8 compression ratio and/or a different compression type than said first-
9 compressed multimedia content; and
10 second storage means for storing said second-compressed multimedia
11 content.

1 47. The system as in claim 46 further comprising:
2 first decompression means for decompressing said second-compressed
3 multimedia content prior to transmitting said multimedia content to a
4 multimedia rendering device.

1 48. The system as in claim 47 further comprising:
2 second decompression means for decompressing said first-compressed
3 multimedia content after said second-compressed multimedia content has been
4 decompressed and transmitted.

1 49. The system as in claim 46 wherein said first compression means
2 comprises intra-frame coding and said second compression means comprises
3 inter-frame coding.

1 50. The system as in claim 49 wherein said intra-frame coding is DCT
2 coding and said inter-frame coding comprises motion compensation and frame
3 differencing.

1 51. The system as in claim 49 wherein said intra-frame coding utilizes
2 ADPCM compression and said inter-frame coding utilizes DCT-based
3 compression.

1 52. The system as in claim 46 wherein said conversion means comprises a
2 general purpose CPU executing a compression algorithm as a background task.

1 53. The system as in claim 52 wherein said conversion means further
2 comprises one or more swap files utilized by said CPU during execution of said
3 compression algorithm.